

Smartphones cause problems for college students

Craig Berkley
Cambridge University



A Cambridge University study found that excessive smartphone use can create problems for college students

A survey of more than 3,400 university students in the USA has found that one in five respondents reported problematic smartphone use. Female students were more likely to be affected and problematic smartphone use was associated with lower grade averages, mental health problems and higher numbers of sexual partners.

Smartphones offer the potential of instant, round-the-clock access for making phone calls, playing games, gambling, chatting with friends, using messenger systems, accessing web services (e.g. websites, social networks and pornography), and searching for information. The number of users is rapidly increasing, with some estimates suggesting that there are now more than 2.7 billion users worldwide.

While most people using smartphones find them a helpful and positive part of life, a minority of users develop excessive smartphone use, meaning that smartphone use has significant negative effects on how people function in life. Previous research has linked excessive smartphone use to mental health issues such as anxiety, depression, post-traumatic stress disorder (PTSD), attention deficit hyperactivity disorder (ADHD) and problems with self-esteem.

A collaborative team of researchers from the University of Chicago, University of Cambridge, and the University of Minnesota, developed the Health and Addictive Behaviours Survey to assess mental health and well-being in a large sample of university students. They used the survey to investigate the impact of smartphone use on university students. Just over a third (3,425) of students invited to take the test responded. The results are published today

in the *Journal of Behavioral Addictions*.

The self-report survey consisted of 156 questions. Based on their responses, the students were given a score ranging from 10 to 60, with a score of 32 and above being defined as problematic smartphone use. This definition was based on a threshold recommended previously in clinical validation studies using the scale. Typical characteristics of problematic use include: excessive use; trouble concentrating in class or at work due to smartphone use; feeling fretful or impatient without their smartphone; missing work due to smartphone use; and experiencing physical consequences of excessive use, such as light-headedness or blurred vision.

The researchers found that one in five (20%) of respondents reported problematic smartphone use.

Problematic smartphone use was greater among female rather than male students – 64% of problem users were female. Importantly, the researchers found a link between problematic smartphone use and lower grade point averages (academic achievement).

“Although the effect of problematic smartphone use on grade point averages was relatively small, it’s worth noting that even a small negative impact could have a profound effect on an individual’s academic achievement and then on their employment opportunities in later life,” said Professor Jon Grant from the Department of Psychiatry & Behavioral Neuroscience at the University of Chicago.

While students reporting problematic smartphone use tended to be less sexually active than their peers (70.9% compared to 74%), the propor-

tion of students reporting two or more sexual partners in the past 12 months was significantly higher among problem users: 37.4% of sexually-active problematic smartphone users compared with 27.2% sexually-active students who reported no problem use. The proportion with six or more sexual partners was more than double among sexually-active problematic smartphone users (6.8% compared to 3.0%).

“Smartphones can help connect people and help people feel less isolated, and our findings suggest that they may act as an avenue for sexual contact, whether through sustained partnerships or more casual sex,” added Dr Sam Chamberlain, Wellcome Trust Clinical Fellow and Honorary Consultant Psychiatrist from the Department of Psychiatry at the University of Cambridge and the Cambridge & Peter-

borough NHS Foundation Trust.

The researchers found that alcohol misuse was significantly higher in those with problematic smartphone use compared to the control group. To assess this, the team used a scale known as the Alcohol Use Disorders Identification Test: a score of eight or above indicates harmful alcohol use. 33.3% of problematic smartphone users scored eight or above compared to 22.5% of other smartphone users. The researchers found no significant link with any other form of substance abuse or addiction.

In terms of other mental health problems, the researchers found that problematic smartphone use was significantly associated with lower self-esteem, ADHD, depression, anxiety, and PTSD, mirroring similar findings elsewhere.

“It’s easy to think of problematic smartphone use as an addiction, but if it was that simple, we would expect it to be associated with a wide range of substance misuse problems, especially in such a large sample, but this does not seem to be the case,” added Dr Sam Chamberlain.

“One possible explanation for these results is that people develop excessive smartphone use because of other mental health difficulties. For example, people who are socially isolated, those who experience depression or anxiety, or those who have attention problems (as in ADHD) may be more prone to excessive smartphone use, as well as to using alcohol. Smartphone use likely develops earlier in life – on average – than alcohol use problems and so it is unlikely that alcohol use itself leads to smartphone use.”

New research on historic megadroughts may help predict future climatic events

Nicole deRoberts
Columbia University

About a dozen megadroughts struck the American Southwest during the 9th through the 15th centuries, but then they mysteriously ceased around the year 1600. What caused this clustering of megadroughts — that is, severe droughts that last for decades — and why do they happen at all?

If scientists can understand why megadroughts happened in the past, it can help us better predict whether, how, and where they might happen in the future. A study published today in *Science Advances* provides the first comprehensive theory for why there were megadroughts in the American Southwest. The authors found that ocean temperature conditions plus high radiative forcing — when Earth absorbs more sunlight than it radiates back into space — play important roles in triggering megadroughts. The study suggests an increasing

risk of future megadroughts in the American Southwest due to climate change.

Previously, scientists have studied the individual factors that contribute to megadroughts. In the new study, a team of scientists at Columbia University’s Lamont-Doherty Earth Observatory has looked at how multiple factors from the global climate system work together, and projected that warming climate may bring a new round of megadroughts.

By reconstructing aquatic climate data and sea-surface temperatures from the last 2,000 years, the team found three key factors that led to megadroughts in the American Southwest: radiative forcing, severe and frequent La Niña events — cool tropical Pacific sea surface temperatures that cause changes to global weather events — and warm conditions in the Atlantic. High radiative forcing appears to have dried out the American Southwest, likely due to an increase in solar activ-

ity (which would send more radiation toward us) and a decrease in volcanic activity (which would admit more of it) at the time. The resulting increase in heat would lead to greater evaporation. At the same time, warmer than usual Atlantic sea-surface temperatures combined with very strong and frequent La Niñas decreased precipitation in the already dried-out area. Of these three factors, La Niña conditions were estimated to be more than twice as important in causing the megadroughts.

While the Lamont scientists say they were able to pinpoint the causes of megadroughts in a more complete way than has been done before, they say such events will remain difficult for scientists to predict. There are predictions about future trends in temperatures, aridity, and sea surface temperatures, but future El Niño and La Niña activity remains difficult to simulate. Nevertheless, the researchers conclude that human-driven climate

change is stacking the deck towards more megadroughts in the future.

“Because you increase the baseline aridity, in the future when you have a big La Niña, or several of them in a row, it could lead to megadroughts in the American West,” explained lead author Nathan Steiger, a Lamont-Doherty Earth Observatory hydroclimatologist.

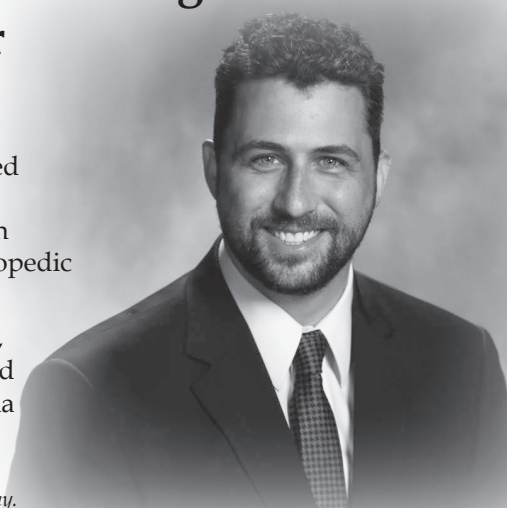
During the time of the medieval megadroughts, increased radiative forcing was caused by natural climate variability. But today we are experiencing increased dryness in many locations around the globe due to human-made forces. Climate change is setting the stage for an increased possibility of megadroughts in the future through greater aridity, say the researchers.

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